I.

A LETTER

TO

SIR JAMES M'GRIGOR, M.D. F.R.S. C.T.S.

Director General of Military Hospitals, &c.

ON

THE SANITARY MANAGEMENT

OF

THE GIBRALTAR FEVER.

BY

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&c. &c. &c.

"Salus populi, Suprema lex."

LONDON:

THOMAS WILSON, PRINCE'S STREET.

1830.

A LETTER

TO

SIR JAMES M'GRIGOR, M.D. F.R.S.

&c. &c. &c.

Sir: Since my return from the mission on which I had the honour of being sent by you, to Gibraltar, in 1828, when the black-vomit yellow fever raged there with such frightful mortality, it has often occurred to me that a great saving of human life might be effected, on any future similar occasion, by the timely issue, as a standing order, of a well-digested code of sanatory instructions, based on the general, and local history, of the disease, commensurate with the actual state of science, and sanctioned by the constituted medical authorities of this country. Why the government has not already called on some of these learned bodies to legislate, publicly, on this important subject, I know not. The diversity of professional opinion, the discrepancy of alleged facts, and perhaps a disinclination to brave, gratuitously, the rancour of party criticism, may have contributed to deter them from a spontaneous effort to form a Code Sanitaire. Be this, however, as it may, the medical officer, whenever he has had to contend with this dreadful scourge, has generally found himself taken unprepared, and always unprovided with any authorised system of medical police to guide him in his difficulties, to save him from indecision and error, from useless, and perhaps pernicious, experiment.

It was with a view to lead towards a remedy for this evil, that I have ventured to draw up the few sanatory suggestions which I now take the liberty of submitting to you and Sir W. Franklin, for your approval. They aim at but one

object—to save the susceptible from being attacked by the disease; and in the present state of our knowledge of it, none will deny, that prevention is better than an attempt to cure. They were forced upon my attention chiefly during my late residence in Gibraltar. What I then observed at the bedside of the sick, and in the dead house: the facts which came to my knowledge, during an active participation of five months, in 1829, in the labours of the three commissions appointed to investigate the history of the disease on the spot: the results, in short, of the most laborious and minute inquiries ever accomplished on any similar occasion, have impressed the fullest conviction on my mind, that the means by which the march of this epidemic may be effectually arrested, and the people saved from its ravages, should it again break out in that fortress, need be no longer doubtful.

From the measures which you have long since adopted, to favor the advancement of science amongst the medical officers of the army, and from the satisfaction with which you have always viewed their efforts to promote that advancement, and to contribute to the good of humanity, I feel confident that my little outline of a Code Sanitaire for Gibraltar, will be indulgently received, and that my motives for attempting a task, which might have been so much more ably executed by many others, will be favorably appreciated.

I have the honour to be, Sir, your most obedient and most humble servant,

DAVID BARRY, M.D.
Physician to the Forces.

Welbeck street; 14 *July*, 1830.

To Sir James M'Grigor, Director General, &c.

On the Sanatory Management of the Gibraltar Epidemic Fever. By David Barry, m.d. &c.

There are two important benefits, which society seems to have a right to expect from the judicious application of medical science to municipal and military police, viz.

1st. The prevention, or warding off, of epidemic disease.

2d. The arrest of its spread, should it unfortunately occur, either from the inefficiency, or neglect of preventive measures.

The smaller and the more circumscribed the community, the more easily accomplished these objects appear to be, and the greater the confidence with which their attainment is looked for. All the arrangements hitherto adopted in Gibraltar, with a view to the accomplishment of either of these objects, have been based on one, or other, of the following sets of opinions as to the nature of the disease with which that territory has been so often afflicted, within the last twenty-five years.

1. That it is only a grade of the ordinary remittent fever, subject to all its laws, never contagious, nor imported; that whenever it has hitherto appeared there, it has been invariably generated within the territory, by a particular combination of local circumstances, independently of introduction from without; that it occurs there sporadically every year; that it is propagated by the influence of causes, to which all are alike exposed, independently of contagion, direct or indirect.

2. That it does not belong to the class of remittent fevers, but is a disease of a peculiar nature; that it never attacks the same individual more than once, during life; that it is contagious, and therefore capable of being imported and propagated, at certain seasons of the year, amongst a population previously healthy, by the introduction of one, or more, infected persons, or things; that it is not found sporadically in the territory, and that it never originates there.

3. That whether the disease be only a grade of the ordinary remittent fever, or one of a peculiar nature, yet that it may originate in causes purely local, either in reference to particular spots of the territory, or to some ship in a foul state.* But that it may become contagious, that is, be propagated directly by emanations from persons sick of the disease, or indirectly by means of their clothes, or other effects, under circumstances favorable to such propagation.

These propositions embrace, I believe, the tenets of all

* Audouard, Recueil des Memoires, &c.

the parties hitherto formed on the subject of the Gibraltar fever. Each set of opinions has its respective medical and lay abettors. Each has been, and may again be, exclusively acted on, in the season of calamity, as the views of the principal medical officer, for the time being, may incline. Certain it is, however, that they cannot all be correct, nor equally conducive to public safety.

Whoever directs preventive measures, under the conviction that the first set of opinions is alone well founded, will, of course, place at nought all consideration of danger from abroad, and direct his attention solely to internal arrangements. These come under the heads of municipal improvement, cleanliness and ventilation, removing all sources of unwholesome effluvia, distribution and lodging of the population, limitation of its numbers, wholesomeness and abundance of food and water, proper clothing and occupation, &c. Under the conviction of this doctrine, all vigilance, observation, and purifying, of persons and things arriving from the outside, are perfectly useless, in a sanatory point of view, and being injurious to commerce, ought, on the same principle, to be discontinued.

The abettors of the second set of propositions would naturally recommend active, and well-regulated, quarantine establishments, and would consider them of primary importance towards preventing the first appearance of the disease. They would look to internal sanatory police, as calculated to promote general health and comfort, and to check contagion, rather than to prevent the local generation of this peculiar malady.

In Gibraltar, where there are no purifying lazarettos, and where the limited extent of territory, and other peculiarities, preclude the possibility of such establishments, precautionary measures, until very lately, have chiefly consisted in protracted quarantine, immersion in water, and careful ablution of every thing belonging to the crew and passengers of ships arriving from suspected places, before they were admitted to what is termed *pratique*, or free intercourse with the community.

Ships from yellow-fever countries, whatever might have been the state of health of their crews, during the passage, were seldom refused admittance into Gibraltar, up to last summer, or into Cadiz, up to the last occupation of that city by the French. Free intercourse, however, with the shore was interdicted for a greater or less number of days, until the quarantine department had reported that their admission to pratique would not be likely to endanger the public health. By a late regulation in Gibraltar, it was

ordered that, in the cases of ships, in which one or more persons had died on the passage, as these deaths are always presumed to have occurred from yellow fever, health guards should be placed on board, on their arrival, for the alleged purposes of more effectually preventing intercourse with the shore, and of enforcing the observance of certain orders as to the manner of landing the cargo. This last operation was conducted upon the following plan: The articles considered incapable of conveying the seminium of the disease from the ship to the shore, were allowed to be landed after ten, fifteen, or twenty days' observation, whilst the crew, passengers, and their effects, were retained on board some days longer.

Although deaths had frequently occurred on board ships, on their passage to Gibraltar, from South America, and the West Indies, but particularly in 1828, when as many as ten died in different ships, on their passage from these countries during the summer; yet, I believe, the only instance in which health guards were stationed on board any of them, was in the case of the Dygden, a Swedish ship. She arrived on the 27th June of that year, having had nine persons sick of fever on her passage, of which two died; commenced landing her cargo on the 17th July; had a man reported sick on the 24th; took health guards on board on the 27th, and was admitted to pratique on the 6th August, when two more sick men were landed from her, and sent to the civil hospital, one as a broken arm, the other as intermittent fever.

In a free port, such as Gibraltar, where every thing is admitted indiscriminately, where smuggling outwards is encouraged, and is indeed the very soul of its trade; where even the obvious and elementary purification of the suspected, and their goods, by water and air, appears to have been sometimes omitted, it need not be wondered at, that the very lax measures, just detailed, should prove ineffectual against the introduction of a disease capable of being caught by personal intercourse, or conveyed in foul clothes or bedding. Indeed, if we admit this mode of infecting a healthy community to be possible, we must be surprised, not that the disease has appeared so often within a few years in Gibraltar, but that it should not have shown itself whenever local circumstances happened to have been favorable to its propagation.

The French, during their late occupation of Cadiz, aware of the laxity with which sanatory, and custom-house guards generally perform their duties, and of the temptations to which inadequate pay, on one side, and commercial avidity,

on the other, must expose them, determined not to intrust the health of their garrison to such hands. They, therefore, absolutely refused to permit vessels from the Havannah, or other yellow fever countries, to enter the harbour, under any pretext whatever, from June to the middle of October, and obliged them to proceed to Mahon, there to undergo a complete purifying quarantine. If the disease, as suspected, had hitherto been introduced into Europe, by South American and West Indian ships, it is evident, that this measure, of all others, is the best calculated to prevent its importation in future. A similar measure was adopted in Gibraltar in 1829, and, if fairly persisted in, will go far towards deciding the long-agitated questions of importation and local origin. It is to be feared, however, that the insatiable cupidity of commerce, ever ready to stake human life against the prospect of gain, will find means to set aside this salutary regulation, long before its preventive influence would be much more necessary, than at the close of a destructive epidemic.

Whatever truth there may be in the third set of propositions, they are not likely to lead to any thing very efficient in the way of preventive measures, because, as ordinary fevers will occur in spite of the strictest quarantine and best-regulated internal arrangements, and may become contagious, the conviction must result, according to this view of the disease, that the breaking-out of an epidemic is nearly, if not entirely, beyond human control. Little or nothing, therefore, will be done under this belief, except to save appearances with the authorities and the public, until the disease has spread its roots amongst the population, and, even then, there will be a weakness and unsteadiness of purpose, corresponding to the vagueness of the opinions.

The very success of measures, of a purely preventive nature, in warding off the approach of distant danger, seems to have a tendency to excite doubts as to their real utility, by lulling the public mind into a persuasion, that there had been no danger to be apprehended. Whenever this false security produces a relaxation of vigilance, and the disease happens to reappear during this abandonment of jealous precaution, sophistry suggests that it is a mere coincidence, and boldly recommends yet another trial of the dreadful experiment.*

*Now that commercial intercourse between the British West Indies and the continent of America has been thrown open by both governments, it is highly probable, that we shall soon hear of the arrival of an infected ship at one or more of the islands, and of the breaking out of the yellow fever, "by the merest accident in the world," about the same time. The long exemption from this dreadful scourge enjoyed by the windward portion of these colonies, since the year 1821, renders this deplorable event doubly probable.

We shall now leave this branch of the subject, and proceed to the consideration of those measures of sanatory police, which have for their object, *the arrest of the disease, at any period of its progress,* but more particularly at its commencement.

What has experience taught us with regard to this disease, upon which efficient sanatory proceedings may be established?

1. We know that, up to the year 1730, the disease was unknown in Europe, and that, since that period, it has appeared in Cadiz and other parts of the south of Spain many times, in an epidemic form, at intervals of various length; that it has visited Gibraltar five times, including its first appearance there in 1804, at intervals of five and a half, two and a half, half a year, and thirteen and a half years.

2. That it never begins to show itself, at least in an epidemic form, in Europe, before the middle of summer, nor after the end of autumn, and that it does not continue its ravages after the cold of winter has fairly set in.*

3. That it never attacks the same individual a second time, however exposed that individual may be to its influence.

4. That, when once it has taken root, it spreads most fatally and rapidly in a close, unagitated atmosphere, under certain circumstances of heat, season, and susceptibility of persons.

5. That, in the immediate vicinity of the first sick of the disease, persons are much more apt to be attacked, than at distant points.

6. That those engaged in the attendance of the sick, and those who are most in the same rooms, or buildings, with them, are more liable to be attacked, than those totally unconnected with them.

7. That centers, or foci, of peculiarly active infection, or contagion, may be formed by the accumulation of persons labouring under the disease, in sheltered, ill-ventilated places; as, for example, in the naval hospital in Gibraltar.

8. That the disease is generally, if not always, confined to a known and limited spot, or district, for days, nay even weeks, after its first breaking out; and that it spreads gradually, often appearing to follow personal removal from one place to another, leaving intervening places free.

9. That it spreads but very rarely, if at all, in an open,

* From the summer to the winter solstice, that is, as long as the days continue to become shorter, is the season during which alone, yellow fever has ever been known in an epidemic form, in Europe.

fresh, well-ventilated country, where the air is constantly agitated and renewed, and where the sick can be widely separated from the healthy.

The sanatory history of the five Gibraltar epidemics affords a most instructive, practical lesson, as to the comparative value of the measures adopted to check their respective progress, and also as to the apparently comparative correctness of the medical opinions, on which these measures were based.

At the breaking out of the first, the terrible epidemic of 1804, the chief medical officer was exclusively guided, in his arrangements, by the set of opinions marked No. 1. The rifeness of the prevailing fever was, at first, attributed to eating melons and drinking water. At a later period, the fumes of a lime kiln, then, and still, burning in the town, were accused of promoting the excessive mortality. The destroying march of the disease, however, did not experience the slightest sanatory check, until it had carried off some thousands of the population, and attacked the doctor himself, the conscientious supporter of non-contagion and local origin. In the month of October, at the very acmé of this dreadful epidemic, Dr. Pym became the chief medical officer. Even at that very early period of our acquaintance with the disease in Europe, he held the opinions marked No. 2, of which he may be styled the founder. The sanatory measures which he recommended were based upon these opinions, and the result, even of their late and partial application, was, that 1,200 of the military, (which at the beginning of the epidemic amounted to 4,200,) were saved from being attacked: whilst of the civil population, amounting to 14,000, only twenty-eight individuals escaped infection.*

In 1810, the disease was publicly known to have arrived in the bay from Carthagena, on the 19th September, on board certain transports; and, though closely watched by Dr. Pym, then also at the head of the medical department of the garrison, it found its way on shore on the 20th of October, thus affording him a fair opportunity of trying the efficiency of measures founded on his peculiar doctrines. He acted, on this occasion, on the same principles as he had done in 1804, and, by his admirable promptitude and decision, confined the ravages of the pestilence on shore to about a dozen victims.

In the year 1813, the first case of the third epidemic of Gibraltar occurred on the 12th of August, in the person of a

* Observations on the Bulam Fever, by Dr. Pym, p. 27.

man who had arrived the day before from Cadiz, where the disease then prevailed. He died on the 19th.* From the 3d to the 10th September, nine deaths had taken place: on that day, my esteemed friend, John Cortez, a Spanish surgeon, long resident in the garrison, than whom there are but few more observant, and none more honourable, recognised, in two patients, the disease which he had already witnessed in both the former epidemics. He immediately gave the necessary information to the chief medical officers, but the Board of Health, which had been established since May, distracted, as it would appear, by the discrepancy of medical opinion, delayed the adoption of vigorous measures. In the mean time, the disease took root, and carried off, before the end of November, one thousand victims. The sanatary arrangements adopted, though too late, were not quite ineffectual: they were based upon the second set of propositions, and succeeded, by insulating the dockyard, in saving nearly the whole of its inmates from being infected. A foul lazaretto was established on the 19th September, on one of the north glacis, in which Mr. Cortez remained shut up, in charge of the sick, to the 23d December following, and thus acquired a practical experience of the disease, of which few can boast.†

In 1814 the disease again broke out, was again first recognised by my vigilant friend Cortez, so early as July, and after a long and deadly struggle, was fairly beaten out of the field before the end of October, by the prudent and energetic dispositions of Mr. Inspector of hospitals Frazer, then chief medical officer. It is needless to say, that his arrangements were based on the second set of propositions. They would most probably have been completely successful, and have stifled the disease at its very commencement, had not the owner of the house first infected concealed some of its inmates from the medical, and police inspectors, to prevent their being sent to the neutral ground. The persons thus concealed were Barbary Jews, and furnished the next cases that occurred in the town, after the sick and the suspected had been sent into the lazaretto camp.‡

* Vide the obituary register of the Roman Catholic church of Gibraltar, and the books at the Quarantine Office.

‡ Vide Letter on the Gibraltar Fever, by W. W. Fraser, p. 8.

‡ These particulars I have from Mr. Cortez, who considers the breaking of the disease, in 1814, due to *reproduction*. Domingos Moreno, a Portuguese, was attacked, on the 27th July, and became his patient. He died on the 4th August, and was opened by Mr. C. Two days previously to his death, he confessed that, at the burning of infected articles, the year before, he had purloined some clothes, which he still preserved in his chest.

In the year 1828, after an interval of nearly fourteen years of uninterrupted public health, the disease again broke out in Gibraltar. It was viewed by the then chief medical officer, at its commencement in August, and during the early period of its progress, in the same light that it had been viewed in 1804, that is, exclusively upon the principles of the first set of opinions. In the measures recommended towards the middle of its destructive career, there seems to have been a strong belief of contagion; but not the slightest check was put to its ravages, except that produced by the diminution of its proper food, until, as in 1804, Dr. Pym was once more placed at the head of the medical administration of the garrison. At this time, the official reports of the progress of the disease exhibited the most alarming numbers in their columns: although the daily deaths, and fresh attacks, had diminished. This was owing to the convalescents having been, for some weeks, allowed to accumulate. These, as they quitted the hospital, were at first sent on board a transport, and when this would hold no more, into sail lofts, and tents in the dockyard. In fact, no man, after having once entered the sick ward, whether he lived or died, was permitted to return to his corps, nor to duty of any kind, notwithstanding the strong remonstrances of regimental commanding officers on the subject. This injudicious measure, the result of a vague, undefined dread of contagion, was said to be based on something which was termed "*plague precaution.*" Dr. Pym, immediately on taking charge, reduced the convalescents to the very minimum, by discharging a great number of them, to be employed in the town, on the duties most likely to endanger the health of the, as yet, unattacked soldier.

I need not inform you, sir, of the rapid reduction of the sick list which followed this arrangement. The records of your office will furnish the proof, and, if these were wanting, the whole surviving population, civil and military, would testify, with one voice, as to the striking amelioration of public feeling, the restoration of confidence, and immediate quieting of the public mind, which Dr. Pym's measures produced, at that period of deep and dreadful agitation.

The melancholy experience of these five epidemics, by which nearly ten thousand persons were swept off, has fully proved that the disease, whatever may have been its origin, if left to itself, under certain circumstances, *will spread and kill,* yet that much may be done, even in the

limited territory of Gibraltar, towards diminishing the number of its victims, by proper sanatary arrangements. But as these arrangements necessarily entail great inconvenience upon individuals, and often on the whole community, it becomes highly desirable that they should not be resorted to, except on a full conviction of their necessity. On the other hand, as their efficiency must, in great measure, depend on the promptitude with which they are applied, no means should be omitted which can contribute towards the determination of the moment, when further delay in their adoption would become dangerous and culpable. That moment will have arrived, when one, or more, cases of the disease have been proved to exist within the territory. It therefore becomes a matter of the very highest importance, *not only to be able to distinguish this disease from every other,* but also that such measures should be taken as will ensure to those whose experience enables them to make this distinction, an early view of all suspicious cases. Here, then, another set of precautionary measures come into action, such as the division of the town and territory into small districts; the appointment of medical, and lay-inspectors to each;* enjoining the heads of families, under certain penalties, to report to the inspectors of their district any febrile attack occurring in their families, during the suspicious season, within twenty-four hours after its commencement; enforcing similar reports to the chief medical officer, from all civil practitioners, as to their patients; strictly preventing the burial of the dead, under any pretence whatever, before they shall have been examined, at least externally, by an appointed medical officer.†

But it may so happen, that the chief medical officer has never seen the disease; or that he is impressed with the belief, that it is identical with the ordinary remittent, autumnal fevers of the country, or, having seen it, he may not have sufficiently marked its distinctive characters; or, in fine, he may have allowed himself to conclude, that there are no signs, nor characters, peculiar to it.

The early detection, and confident, full recognition of the disease, if possible, in the very first subjects attacked by it, are the cardinal points upon which the prevention of its spread depends. Thousands of lives may hang on the decision of the

* Both these prudent arrangements have been amongst the standing orders of the garrison, every summer and autumn, since 1813.

† These important precautionary regulations were submitted to Sir George Don, by Dr. Pym, in the spring of 1829, in his code of quarantine arrangements.

medical authority, at this moment. His responsibility is truly awful, and he should be well prepared for the important duty he has to perform. To illustrate this, and to place in a strong light the fatal consequences that would be likely to result from mistaken views, or inexperience, on the part of those to whose professional opinions the lay-authority always appeals, on such occasions; I shall take the liberty of giving the following brief sketch of the breaking out and early progress of an epidemic, which actually occurred, not long ago, in the south of Spain. The facts recorded are taken from the most authentic sources.

In the beginning of August, three or four persons are reported to have died suddenly. Apoplexy, childbirth, and accident, are assigned as the causes of these deaths. Young medical men are sent to examine the bodies, and are either refused permission by the friends, or having superficially examined one, or two, make insignificant reports. The public health is apparently in the most satisfactory state, and had been so for several years. One, two, half a dozen persons, are reported as ill of fever: they are seen without loss of time, by the principal medical officer, and those most in his confidence. It is nothing more than the ordinary fever of the season, and of the country. One, or two more deaths take place; but indigestion, from eating unwholesome food, is assigned and received as the cause. Ten, or twelve, new cases of fever are reported; but they are pronounced to be merely the autumnal, bilious remittent, which occurs every year, and from which, as every body knows, there could be nothing to fear. The old nurses, however, who had seen former epidemics, begin to whisper abroad, that black vomiting and yellow skins have been observed; that the fever seems to spread in families, and amongst persons closely connected; that three or four, whom they name, cannot recover; the words *epidemia*, and *vomito negro*, are heard in suppressed whispers. But still the men of science, scorning to be influenced by old women, and ashamed, perhaps, to retract their opinions, insist that the disease is nothing else than the bilious remittent; that it has been produced by the foul state of certain drains and privies. Scavengers, fumigators, and purifiers of all descriptions, are immediately put into requisition; chemical compounds are thrown into the supposed sources of malaria and pestilence; the temples of the goddess Cloacina are ordered to be nailed up, and all the outlets of infectious effluvia to be hermetically sealed.

In the mean time, ten or a dozen fresh cases of fever, and

one or two more deaths, are reported. Expurgating measures are urged with redoubled vigor: yellow eyes and skins, with dark vomiting, become every day more common. The public has taken alarm, and the chief physician states officially, that bilious remittent fever, sometimes, puts on the appearance of yellow fever; but still, that the public health is not below par, and that no apprehension need be entertained of epidemic disease.

It was now September: more than three weeks had elapsed, eight or ten deaths had taken place, and forty or fifty cases of fever had been reported. Every body, except the doctors, was persuaded that an epidemic had already commenced. Public rumor becomes the vehicle of truth: prudent people begin to emigrate; the neighbouring towns catch the alarm; medical men, acquainted with the disease, are sent to examine and report upon its nature, and the infected city is excommunicated by a printed bann and a sanatary cordon, as having a pestilential disease within its walls, before its own authorities were officially aware of the fact, that such disease had broken out.

This blow, severe as it must be considered, was but the least important of the evils resulting from the first cases having been mistaken, or overlooked. A whole month had been lost, not a single sanatary step had been taken, at least no step at all useful, whilst during that time the disease was fixing its roots deeply amongst the population. Hurried and tumultuary measures were now resorted to. Many of the inhabitants were forced, in the open day, to quit their dwellings, knowing, for some hours before, that they were to be so forced.* Great individual hardship and inconvenience were the consequence: some had already fled to other districts of the town, to avoid being sent into camp, and some, under various pretexts, were permitted to return to their dwellings, in a day or two after they had been encamped with their families.

It is almost unnecessary to add, that, under such management, the disease spread with fatal, and rapid strides, and that it destroyed many hundreds of valuable lives, before the end of autumn.

* Two motives always actuate the Spaniard and the native of Gibraltar to conceal, or dissimulate, by every possible artifice, the existence of yellow fever in their families. 1st. To avoid the inconvenience of being sent into the lazaretto camp, and other sanatary annoyances. 2dly. As the older members of the family have generally acquired immunity for themselves, by having had the disease in some former epidemic, they are averse to their children being deprived of the present opportunity of acquiring a similar immunity, knowing that, at their age, the risk of death is less than it will ever be afterwards, if so exposed to infection.

I have said, in another part of this letter, that the early detection, and steady recognition, of the disease, if possible, in the very first subjects attacked by it, are the cardinal points, on which the prevention of its spread depends. Supposing, then, that all persons attacked by febrile disease, during the suspicious months, are honestly and promptly shown to the chief medical officer; how is he to distinguish this peculiar disease, from the ordinary fever of the country?

1st. The Gibraltar fever never attacks the same individual a second time. This invaluable fact, now established on the firmest basis, and subscribed to by the very warmest supporters of non-contagion and local origin,* divides the population, at once, into two most important sanatary classes: the susceptible and the non-susceptible. If, then, there be satisfactory evidence, that the person reported as labouring under fever has already suffered an attack of the disease, in any former epidemic, we may dismiss all apprehension. The indisposition, whatever it may be, is not the Gibraltar fever. If, on the contrary, it be quite certain that the subject of febrile attack never has had the yellow fever before, or if the evidence on the subject be doubtful, there is cause for suspicion, and therefore for extreme vigilance on the part of the medical authority. The unwilling acknowledgment of the axiom, on which these conclusions are founded, wrung, at last, by dearly-bought experience, from the abettors of the first and third sets of opinions, affords a pledge of wiser management in future, and adds another wreath to the imperishable laurels which Dr. Pym, the practical founder of the axiom, had already gained by its successful application to the saving of human life, and human suffering.

2. We shall suppose the person attacked to be of the susceptible class, and the first symptoms, a sense of cold, or shivering, frontal headach, pains in the back and limbs, flushed cheek, injected eye, nausea, or vomiting the ordinary contents of the stomach, yellowish white, moist tongue, quickened pulse, constipated bowels; succeeded by alternate chills and flushings, heat of skin, short and sparing sweats, if any, sleep none, or uneasy and interrupted; vomiting of bilious matter, pains something like rheumatic; tongue deeply coated, creamy; thirst none, or moderate; eyes much injected, cheeks flushed; the whole countenance sometimes bloated and livid, with somno-

* Vide Wilson's Historical Sketch in the Lancet, vol. ii. June 12, 1830, p. 425.

lence; an appearance of being drunk; urine high coloured; tenderness and sense of tightness about the epigastrium, and margin of the diaphragm. These symptoms continue, with little or no abatement, though variously combined and modified, from twenty-four to seventy-two hours. Whilst they persist, the patient is still in the first or febrile stage of the disease: their mitigation constitutes the commencement of the second, or apyrectic stage.

If this case be the first, or one of the first that has occurred, no precise determination, as to its nature, can be arrived at, whilst the symptoms have so little to distinguish them from those we meet in ordinary fevers. One or other of the exanthemata may be coming on, or the disease may assume the regular, remittent, intermittent, or mild continued type. The class, however, to which the patient belongs, the season of the year, and, perhaps, some recent occurrences connected with the individual, or the territory, will tend strongly to fix suspicion on such a case.

3. We shall go on, and suppose that no eruptive disease follows the fever we have noticed. The violence of all the symptoms subsides within a few hours; the vomiting ceases; the pulse and skin become nearly natural, or quite so; the pains diminish, the patient expresses himself much relieved, talks of getting out of bed, and perhaps calls for food. This change constitutes the second stage of the disease, the termination of the febrile paroxysm. If the case be about to terminate favorably, the amendment, once begun, continues, and the patient, after the sixth or seventh day, often much sooner, according to the previous train of symptoms, may be pronounced clear of all danger. But the very recovery of such a patient, without a second febrile paroxysm, renders the case doubly suspicious, by depriving it of all analogy with intermittent or remittent fevers. Should three or four other cases, similar to this, occur about the same time, in the same family, or amongst persons closely connected by neighbourhood or intimacy, they would be almost enough to mark the commencement of an epidemic: but we are never left long in doubt.

4. Let us imagine that one of the first cases is about to terminate fatally; some, or all, of the following phenomena will be noticed before death. After the apparently favorable change, which constitutes the second change, has continued for six, twelve, or twenty-four hours, the white of the eye becomes yellow, is still deeply injected, perhaps ecchymosed; the countenance assumes a dirty, leaden hue, and haggard aspect; livid blotches are noticed on various parts of the body; the stomach refuses food; vo-

miting returns; the neck and breast put on a cadaverous yellow tinge, such as is often seen in the dissecting room; there is great sensibility, sometimes excruciating pain and sense of heat, at the pit of the stomach; we find the skin colder than natural; the extremities like marble; dark brown, flakey matter, blackish, or black liquid, are thrown up; there is oozing of blood from the gums; the teeth are covered with dark sordes; the pulse sinks, becomes almost imperceptible; there is hiccup, the most pitiable restlessness, incessant tossing of the head and limbs; urine is no longer secreted; delirium often precedes death by some hours; there is sometimes coma and low muttering, subsultus.* Often the patient is perfectly collected to the moment of dissolution, which generally takes place from the third to the seventh day,

5. If the subject that has died under a train of symptoms, such as those I have just described, be examined after death, the following appearances, or the greater part of them, will be found. The body, though it should not have been yellow during life, will probably become so after death; the livid, or mahogany-coloured patches are sometimes found to have disappeared, or to have changed their position; blackish liquid in the stomach, or bowels, or both; the cardiac lining of the œsophagus red, and stained a shining black, as if japanned; ecchymosed spots, of various sizes and shades of red, on the mucous membrane of the stomach and duodenum. The ulcerated and elevated patches, so usual in the small intestines, in ordinary fevers, are never found in this. The liver either of a uniform fawn or yellow colour, or partly of this colour and partly natural, looking as if it had been partially boiled; its consistence and volume but little changed; the urinary bladder empty, or containing but a few drops of liquid. The other organs healthy, or so inconstantly and slightly altered in structure, as to afford very little worthy of record. Rather a paucity of blood, black and thin. Should the face have been livid after death, as is not unfrequently the case, the opening of the descending cava, or subclavian vein, during the dissection, immediately removes the livor, and leaves a pale yellow, if the head be but slightly elevated.

A single fatal case, such as I have described, carefully watched through its progress, in Gibraltar, during the months of August, September, or October, or a single dissection resembling that just detailed, though the subject should not have been seen, professionally, before death,

* Sometimes spasmodic death, as if produced by strychnia, or upas-tieuté poison.

ought to be quite enough to determine the medical authority to recommend the adoption of the most active measures. But let us suppose that the first six or eight cases have recovered, without manifesting any of the symptoms of the third stage, (which is highly improbable,) it may be urged that these have been only so many slight attacks of feverish indisposition: granted. If, however, those only are attacked, who had never passed the disease before, members of the same family, their visitors, or neighbours; if there be no second paroxysm of fever; if there have been no precursory symptoms; if the bowels be costive, instead of lax, as at the commencement of ordinary fevers; if the headach, the injection of the eye, the coating of the tongue, the flush of the cheek, expression of the countenance, and the general pains, possess the peculiar characters so familiar to those who have witnessed other epidemics, there are the very strongest grounds for suspicion, even before a single death shall have occurred. But yellow eyes, passive hemorrhages, dark vomiting, speedy dissolution, and post-mortem appearances, will quickly remove all uncertainty.

The very first cases of fever, then, that occur about the end of summer and the beginning of autumn, must be carefully observed and faithfully recorded. The subjects of the very first deaths must be minutely examined, and the appearances on dissection accurately taken down in writing, on the spot, and testified by all present. If the *ensemble* of the history, symptoms, and anatomical characters, be such as I have attempted to describe, the real Gibraltar epidemic, or yellow fever, or *vomito prieto*, or Bulam fever, has actually commenced, and will, in all human probability, spread, if efficient measures be not quickly adopted to check its progress.

Under these dreadful circumstances, the safety of the community must not be sacrificed to medical sophistry. The chief health officer is bound, as he values human life, to report immediately to the lay authority, and submit to him the authentic records of the suspicious cases and their dissections. Whatever may be his own views as to the nature of the disease, whatever name, source, or cause he may think proper to assign to it, it will spread, it will destroy hundreds, (and it matters but little whether by contagion, or malaria,) if it be not crushed in the egg. Experience has happily taught us the means by which it may be crushed, at this stage of its progress, and the chief medical officer, who does not know when to recommend,

and how to apply, these means, is shamefully unfit for, and unworthy of, the high trust reposed in him.

Whenever medical men have tried to check the destructive march of this disease by merely attempting to cure those attacked by it, or by purifying the spot occupied by the sick, they have invariably failed, and most miserably too. It seems to laugh at remedies, and but too often destroys both the patient and his doctor. *The prevention of attack is the only source of safety.* This is the principle on which Dr. Pym has always acted, and he, beyond all question, has done more towards saving his fellow-creatures from this dreadful scourge, than the whole profession put together, from the days of Hippocrates to the present hour. Indeed, I know of nothing, practically useful, that has been done or established on this subject, except by him, or after his precepts and example. The following are the measures by which he put an end to the incipient epidemic of 1810, in Gibraltar, in the month of October; the season at which, whenever the disease has hitherto prevailed there, its spread and its mortality have been the most remarkable.

Having recognised the fever in the very first individuals attacked on shore, he reported the fact to the lieutenant-governor, without the loss of a single moment, and obtained from him the most ample authority, to take whatever steps he might think necessary to prevent its spread. Not a whisper of alarm was allowed to transpire, lest the sick, or the suspected, should scatter themselves over the territory, to avoid the rigour of sanitary arrangements. "I was aware," says Dr. Pym, "from what I had seen in 1804, that the only way of cutting short the contagion, was by the most prompt and decisive measures, to separate the sick from the healthy, and to prevent any communication between those persons who might be suspected of having imbibed the disease, and the other inhabitants."* Tents were pitched during the day, on the neutral ground, as if for military purposes; and in the dead of the night, when the air was cool, and the streets deserted, a cordon of troops was thrown round the infected district. Persons, who had already passed the disease, conducting carts provided for the purpose, carried off the whole of the sick and the suspected, and deposited them in the tents, on the neutral ground, (now declared to be a lazaretto,) outside the walls of the fortress, where their wants were ministered to, by unsusceptible attendants.

* Vide Observations on the Bulam Fever, p. 50.

The contaminated district was kept in strict quarantine for fourteen days, and its inhabitants inspected daily, by a medical officer. Persons showing symptoms of the disease, of whom there were several within a few days, ("all neighbours of the first family attacked,") were, of course, sent to the lazaretto, whilst their houses and effects were made to undergo suitable expurgation. "Some cases of black vomit having occurred in the 4th and 7th veteran battalions, then forming part of the garrison, these corps, with their whole hospital establishments, were immediately sent into camp. "Very few men," continues Dr. Pym, "were reported sick after the regiments moved into quarantine; three of them, however, were taken ill in the same tent. Six died from the disease, who were all taken ill in the same barrack room."

I cannot help noticing here a very remarkable case, showing, in the strongest light, the danger of permitting the healthy to use infected bedding. The only member of the first family attacked, who continued healthy from the beginning, was seized on the fourth day after his return to his habitation, and died with black vomiting, in less than seventy hours' illness. Upon inquiry, it was ascertained that the inspector of the district had neglected to wash and purify the bed which this young man slept upon, and which had been used by some of his family, when the disease first made its appearance."*

With this case ended the epidemic of 1810, and thus, by the prompt and judicious separation of the contaminated from the susceptible, the disease was arrested; and the people saved, at a season of the year, too, when (as we now know) this disease usually attains, in Europe, the very acmé of its pestilence and mortality.

If the vigor and promptitude of the medical arrangements adopted during this epidemic, the steadiness of the principles upon which they were based, and the salutary results that followed their application, be contrasted with the vagueness of certain theories, and the disastrous indecision manifested in 1804, and in the other epidemic of which I have already drawn a sketch, there can, I presume, be no hesitation as to the choice of measures, on similar occasions, in future.

I shall now take the liberty of submitting a series of sanitary instructions, founded on the experience of the past, which, if promptly and faithfully acted on, would, I

* Vide opus cit. p. 53.

have no doubt, either completely stop the spread of any future epidemic of yellow fever in Gibraltar, or at least effect a large saving of human life. Although these instructions are made to refer, in the present instance, to that garrison only, they will be found equally applicable, with slight local alterations, to any of our other colonies, which may hereafter be visited by a similar calamity.

1. Let us never lose sight of the grand, inestimable facts, that the Gibraltar fever, in its former visitations, has rendered one portion of the population the invulnerable protectors of the other portion from its own future attacks, and that each individual, as he passes through its ordeal, is not only rendered safe himself, but becomes capable of being made a source of safety to many others.

2. When the disease shall have been proved to exist within the fortress, during the hot months, let the sick and the suspected be immediately removed without the walls, as nearly as possible in the manner practised in 1810, and there kept effectually separated from the healthy, unsuspected, susceptible part of the inhabitants.

3. Let the infected houses and goods be kept in strict quarantine, and purified by water, air, fumigations, and every other means that may be thought advisable; great care being taken that these expurgatory measures be executed by non-susceptible persons.

4. Let no time nor labour be thrown away, at this most important crisis, on cleansing drains or privies. Experience has already proved, most fully, both in Cadiz, in the great epidemic of 1800,* and in Gibraltar in 1828, the perfect inutility, nay, the absolute mischievous tendency of this measure, when adopted after the fever has commenced, with the view of arresting its propagation.

5. Should the infection appear to spread within the territory, notwithstanding the removal of the first sick, all theories must be abandoned, and one maxim must, alone, guide all our measures, viz. *that the disease will stop as soon as the susceptible are separated from contaminated places, persons, and things.*

6. Since, however, it would be obviously impracticable to remove all the susceptible from the fortress, at once, when an epidemic breaks out after a long interval of public health, and when, besides a large portion of the civil population, the whole garrison may belong to this class, as was the case in 1828, we must send outside the walls all move-

* Vide Vilalba (Epidemiologia Espanola), ann. 1800.

able foci and fomites of contagion, and as many as possible of those capable of being affected by such as cannot be removed.

7. The civil hospital, which stands nearly in the center of the town, should be transferred, with its whole establishment, to the neutral ground, to serve as the nucleus of a civil lazaretto, on the very first breaking out of the disease. Regimental hospitals, also, should be sent out, as the corps to which they belong happen to be attacked.

8. No family, after having been once contaminated, should be allowed to remain an hour in the fortress, particularly at the commencement of an epidemic. Temporary emigration should be encouraged, amongst the civilians, by every possible means, and the whole susceptible population, civil and military, should be scattered over the neutral ground, the ships in the bay, Windmill hill, and Europa flat, as widely as the circumstances of the fortress, and the limited extent of the territory, will admit.*

9. Whenever a regiment becomes contaminated, it should be immediately encamped outside the fortress, if it can be spared: if it cannot, on Windmill hill, or Europa flat. There are no other situations within the walls, where the atmosphere is not close and sultry during the summer and autumn, and therefore improper for encampments.

10. The sanitary division of the healthy into the susceptible and the non-susceptible, naturally dictates the classification of the sick into the decided epidemic, the suspected, and the unsuspected. There should, therefore, be three distinct hospital establishments, viz. 1. The foul lazaretto, for pronounced cases. 2. The lazaretto of observation, for those cases which may, or may not, turn out to be epidemic. 3. The free or clean hospital, for accidents and non-susceptible sick. All the attendants of the first and second establishments, medical, clerical, and others, should be kept, if possible, in quarantine.

11. The bed, bedding, and every thing personal to the sick soldier, sent to either of the two first hospitals, should follow the fortunes of their owner. If the sick man should happen to die, his effects will thus remain where they can do no further mischief, viz. in the foul hospital: should he survive, they accompany him to the convalescent depôt, and thence, after having undergone the most careful ablu-

* It is much to be regretted, at least, in a sanitary point of view, that a larger territory was not attached to Gibraltar, when its possession was secured to England by treaty. The high ground, about the Queen of Spain's Chair, would be a most desirable situation for an epidemic encampment.

tions, fumigations, &c., to the suspected quarter within the fortress, on his return to duty.

12. Hospital bedding, properly so called, should be used, as in time of public health, in the clean hospital only. This, of course, implies that the bed and bedding of the unsuspected sick need not be removed from the tents, or quarters of the healthy.

13. There should be three descriptions of camps and quarters, corresponding to the hospital establishments: the foul, the suspected, and the clean, or free. These should be kept distinct during the epidemic.

14. Convalescents, from the foul and suspected hospitals, should be returned to the fortress, as soon as possible after their recovery, placed in suspected quarters, and appointed to the lightest duties at first, distinct from the uncontaminated, until the return of public health.

15. The guards, and all other duties within the town and in the sheltered situations of the territory, should be reduced to the minimum consistent with the safety of the fortress; and, as soon as the original and convalescent nonsusceptible soldiers are sufficiently numerous to perform these duties, the susceptible should no longer be permitted to participate in them.

16. The building called the naval hospital, which, during the most fatal period of the late epidemic, was crowded with military sick, being constructed in the form of a hollow square, at the bottom of a close and deep ravine, should be abandoned as an hospital, on the very first breaking out of any future epidemic. It might, perhaps, be advantageously occupied as a station for nonsusceptible convalescents.

17. The epidemic sick should, as far as practicable, be treated in detached tents, huts, or sheds, so placed and constructed as to admit of the most perfect ventilation.

18. It will not be enough for the protection of the susceptible, nor for the benefit of the sick, that the latter be sent outside the gates, to the north front. They must be so placed as not to be sheltered by the projections of the rock, nor by the outworks, from the currents of cool air which constantly sweep round that face of the mountain, either from the Mediterranean to the bay, or in an opposite direction, whatever point the wind may blow from elsewhere. No spot, therefore, inside the line of the Orillon ditch and Bayside barrier, should be occupied as an epidemic hospital.

19. As the limits of the territory stand defined at

present, on the land side, the most fitting situation for the epidemic sick, on the north front, would be the north-eastern angle of the neutral ground; for the suspected sick, a space near the former to the westward; for the unsuspected sick, still further to the westward: the three establishments to be placed in *echelon*.

20. Should it so happen that the troops in garrison cannot furnish a sufficient number of nonsusceptible orderlies for the service of their own epidemic sick, civil attendants of that class must be employed from the beginning.

21. In the pitching of tents, and particularly in the erection of boarded sheds, care must be taken that they be not huddled too closely together, and that they be so placed with regard to each other, as to allow a free passage for the currents of air mentioned in 18. Nothing tends more effectually to prevent the propagation of disease than open space, and perfect ventilation.

22. As the town was evidently the centre, from which infection emanated during the first six weeks of the late epidemic, it would be advisable, on any similar occasion in future, immediately on the first appearance of the disease, to cut off all communication with the south, by shutting the gates on that side, and to preserve these two parts of the garrison perfectly distinct, at least as long as the people of the south might continue to afford no proofs of being infected. This measure I conceive to be easily practicable, and perfectly compatible with the safety of the fortress.

23. The first and most important steps towards the saving of human life, on the breaking out of this disease, being its early detection, and the firm, unhesitating announcement of its existence to the proper authority. The chief medical officer should, himself, visit and observe every case of febrile indisposition occurring within the territory from the 15th of June to the 15th of November; and should see every dead body, and have it opened in his presence, if necessary, during that period.

I shall conclude by observing, that this disease has preserved the most perfect uniformity of character, in all its visitations to Europe, from its first appearance in 1730, to its latest, the year before last.* That whether it has been, upon these occasions, of indigenous or foreign origin; whether it be propagated by contagion, by malaria, by meteoric influence, or by all these causes, it will spread under certain circumstances, (at least in Gibraltar,) more

* Many acknowledge the reality of two species of yellow fever: one mild, sporadic, noncontagious; the other malignant, epidemic, and contagious.

rapidly and fatally than the plague itself. That multiplied experience has now taught us what these circumstances are, and how they may be avoided by sanitary arrangements, such as I have endeavoured to point out in the foregoing observations.

May I be permitted to hope, sir, that, should these observations meet your approbation, you will bring them, honoured by that sanction, to the notice of those who officially preside over the general welfare of our colonies and garrisons abroad, in order that they may be made available to the general cause of humanity.

I have the honour to be, Sir, your most obedient and most humble servant,

DAVID BARRY, M.D.
Physician to the Forces.

To Sir James M'Grigor, Director General, &c.

Note extracted from the London Med. and Phys. Journal, for December 1830.

The Editor is enabled to state, from authority, that Sir James M'Grigor, the Director General of the Army Medical Department. and Sir William Franklin, to whom the above sanitary rules were submitted before they were sent to press, have forwarded a manuscript copy of them to the General commanding in chief, with a letter expressive of their approbation.

J. and C. Adlard, Printers, Bartholomew Close.